

SCW
SECURITY CAMERA WAREHOUSE

Technical Guide

Infrared Guide

Infrared is almost invisible thermal light that helps illuminate low light areas. Infrared works great because it's mostly invisible by the human eyes - allowing low light footage without lighting the property using conventional lighting.

Infrared light does have a small red glow on the LEDs. This is normal and is part of the wavelength IR cameras are on. Cameras that advertise not having the glow usually use a far less effective range of infrared. Most customers use the red glow as a deterrent for theft.

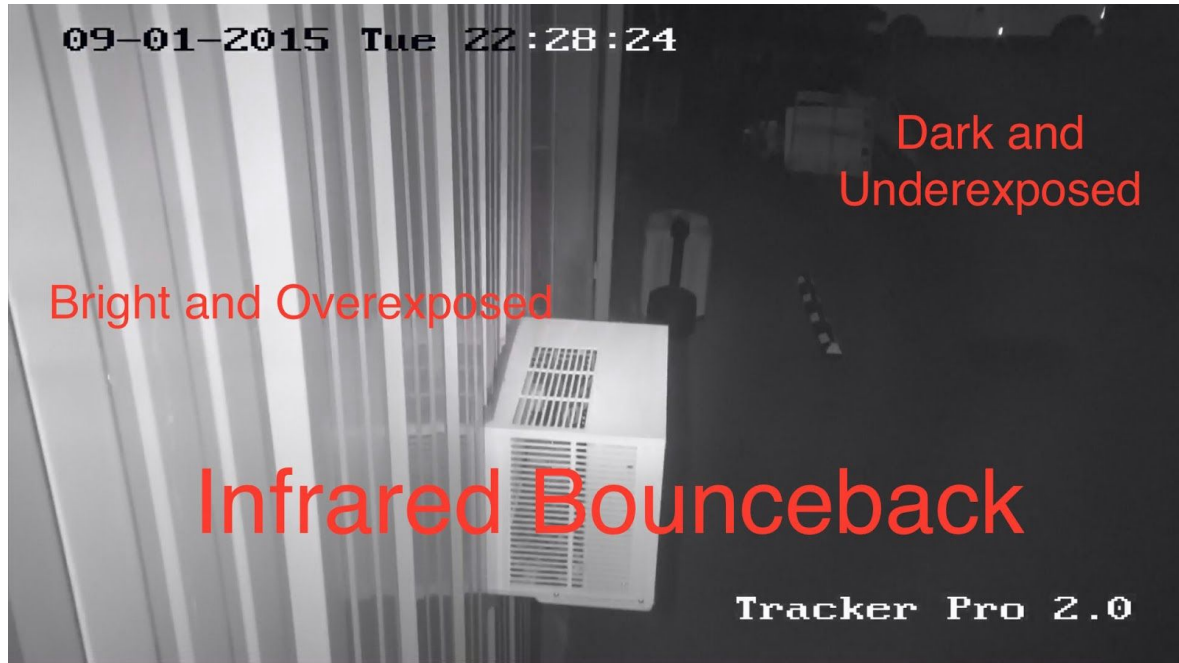
Infrared (IR) does have limitations and issues to be aware of during installation. Most underperforming or infrared issues are the result of improper installation positions or other simple fixes shown below.

Reflectiveness of Infrared

Infrared is a very reflective light source, so positioning a camera where reflections or "bounceback" doesn't occur is imperative.

Bounceback Examples

Take a look at the example picture below. As you can see the IR is quite visible and bright on the wall but the remaining half of the picture is completely underexposed and dark. This is due to the position of this camera. The Infrared is bouncing off the wall, back onto the camera, causing the camera to believe the area is brighter than it truly is, causing the underexposure.



In the second example by moving the camera just slightly to the right, we maintain a far more evenly exposed area with minimal bounceback. In this example, moving it further to the right would be ideal.

Bounceback is also possible with other objects in front of the camera, such as eaves, branches, bushes, etc. Mount cameras away from immediate objects to prevent bounceback as well,

Infrared Fogginess/Haze



Infrared haze or fogginess as shown above is most common on Dome cameras such as the Guardian, Warden and Mosquito but can also happen on any camera that gets opened or touched.

There are three main causes for IR fogginess/haze

Humidity - When installing a dome or bullet camera, opening and then resealing the housing exposes the lens to the environment and can trap humidity in the camera. This causes small water droplets to form inside of the dome.

The easiest way to prevent this is to install on a less humid day. The less humid the day, the less likely moisture will get captured inside the dome. If already experiencing the issue, wait for a less humid day, open the the dome up, wipe and clean the inside of the cover/dome with a lint free cloth and close.

Most cameras have a package of silica beads that take care of most standard amounts of humidity but in more extreme cases you may want to put a few extra packets inside to deal with the moisture.



Dirty Dome/Cover - When installing any camera be careful of touching the outside of the lens or dome/cover area. Fingerprints or smudges on the dome/cover will also cause infrared fogginess.

Make sure dirt, dust, etc is kept off the camera and the cameras are kept clean.



Model Specific Rings - Most cameras need to be tightened to the fullest to ensure the infrared is working. Most dome cameras also have a special foam ring around the lens to prevent the IR from leaking in on the lens/sensor. Make sure each camera is fully tightened and that the foam ring is touching the glass.

Infrared Insects - Infrared, like any light source, attracts insects. Insects can have a surprisingly large impact on infrared

Insects can cause infrared bounceback, reducing quality like the above images show.

Insects more commonly have issues of setting motion detection off during the night.

There is no specific way to prevent motion detection from setting off bugs because the bugs get so close to the camera's sensor it appears big to the camera.

The simplest fix for insects is to keep another light on. A front porch light or a flood light in the area will typically attract the bugs to that light and away from the camera. This fixes the issue for the majority of users.

License Plates & IR



License plate recognition even in broad daylight can be challenging - There are various factors that are involved in such as speed of vehicle, angle of the car, frames per second on the camera, etc.

During nighttime this challenge is increased exponentially. Beyond the standard factors you have to deal with IR and the reflectiveness of most license plates.

The next time you're at a parking lot you can take a look at the exit gate - there is likely a camera specifically dedicated to getting a license plate tag as the success rate is significantly higher than a multi-use camera in most situations.

For example - below is an example of a license plate from a fixed lens Wasp Pro 3.0 camera.



During night time the camera's sensor is working much harder to deal with the lack of light. So details naturally become fuzzier and a bit more noisy.

The biggest issue however is the reflection of the license plate with the infrared. Depending on the angle the light hits the license plate the license plate will reflect significantly.

The amount of reflection will greatly depend on the angle of light.

Potential Solutions

Areal Lighting and Infrared Off - Think of IR as a flashlight, it's a high powered beam of light and any light (especially infrared lighting) will reflect against reflective objects.

The license plate recognition success rate will go up exponentially with IR off. With IR off you no longer have to deal with reflections.

This will require sufficient lighting around the area license plate recognition is required.

Stop Gate - If license plate recognition is absolutely critical to the facility - having a stop gate or a significant speed bump to stop/slow down cars is another way of increasing the success rate.

Smart IR - If areal lighting is not a possibility - Smart IR may have a minor effect. Smart IR will tone down the IR if it detects reflections. However in some cases the reflectiveness of license plates is too much even on low powered IR and Smart IR isn't all that useful.

Conclusion

License plate recognition tests a camera's limit better than anything. We recommend at least 1080p cameras for consistent levels of recognition. For long ranges you'll need both high resolution and high levels of zoom with areal lighting.